

LISTING OF CLAIMSIn the Claims:

This listing of claims replaces all prior versions, and listings, of claims in the application:

1.-20. (cancelled)

21. (new) A particle analyzing system comprising
an area for accommodating particles;
an imaging sensor for capturing image data of the particles, the imaging sensor comprising receptors having a size;
an image transfer medium having a diffraction limited spot size in an object plane, the object plane positioned within the area for accommodating particles, the image transfer medium operative to unit map a projected receptor size in the object plane to about the diffraction limited spot size in the object plane; and
an analyzer coupled to the imaging sensor, the analyzer for characterizing the particles.

22. (new) The particle analyzing system of claim 21, wherein the receptors comprise pixels having a pixel pitch from about 0.1 microns to about 20 microns.

23. (new) The particle analyzing system of claim 21, wherein the area for accommodating particles comprises a chamber through which flows a gaseous medium comprising particles.

24. (new) The particle analyzing system of claim 21, wherein the area for accommodating particles comprises a chamber through which flows a liquid medium comprising particles.

25. (new) The particle analyzing system of claim 21, wherein the analyzer for characterizing the particles is operative to determine at least one of particle shape, particle size, particle color, and particle transparency.

26. (new) The particle analyzing system of claim 21, wherein the analyzer for characterizing the particles comprises a processor and a data store, and the analyzer is operative to compare image data of the particles with data in the data store.

27. (new) The particle analyzing system of claim 21, wherein image data is captured in a synchronous or asynchronous manner.

28. (new) The particle analyzing system of claim 21, wherein the particle analyzing system is an air quality monitor.

29. (new) The particle analyzing system of claim 21, wherein the particle analyzing system is a clean room monitor.

30. (new) A particle sizing system comprising
a chamber for accommodating particles;
a sensor for capturing image data of the particles, the sensor comprising pixels having a size;
an image transfer medium having a diffraction limited spot size in an object plane, the object plane positioned within the chamber, the image transfer medium operative to unit map a projected pixel size in the object plane to about the diffraction limited spot size in the object plane;
an analyzer coupled to the sensor, the analyzer for determining the size of the particles.

31. (new) The particle sizing system of claim 30, wherein the analyzer comprises a computer.

32. (new) The particle sizing system of claim 30 further comprising an illumination source providing at least about 75% of illumination energy having a wavelength range from about 100 nm to about 2,000 nm.

33. (new) The particle sizing system of claim 30, wherein the particle sizing system is a clean room monitor or an air quality monitor.

34. (new) A method for analyzing particles comprising
capturing image data of particles in an object plane using an imaging system comprising
a sensor comprising pixels for generating the image data, the pixels having a size; and
an image transfer medium having a diffraction limited spot size in the object plane, the image transfer medium operative to scale a projected pixel size in the object plane to about the diffraction limited spot size in the object plane; and
using the image data to analyze the particles.

35. (new) The method of claim 34, wherein using the image data to analyze the particles comprises determining the size of the particles.

36. (new) The method of claim 34, wherein using the image data to analyze the particles comprises determining the shape of the particles.

37. (new) The method of claim 34, wherein using the image data to analyze the particles comprises comparing the image data to stored image data stored in a memory.

38. (new) The method of claim 34, wherein using the image data to analyze the particles comprises a real time particle size determination.

39. (new) The method of claim 34, comprising providing the particles to the object plane in a liquid medium.

40. (new) The method of claim 34, wherein comprising providing the particles to the object plane in a gaseous medium.